Applicants	:	R. Fischer, et al.
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For	:	ACTIVE AGENTS COMBINATION EXHIBITING INSECTICIDAL AND ACARICIDAL PROPERTIES
Group Art Unit	:	1616
Examiner	:	PRYOR, A.N.

DECLARATION under 37 C.F.R. 1.132

Dipl. Biol. Heike Hungenberg hereby declares:

- that she is a biologist having studied at the University of Giessen, Germany;
- that she received her diploma in biology at the University of Giessen, Germany in 1992;
- that she entered the employ of Bayer in 1992;
- that she has specialized in plant protection (insecticides);
- that the following tests have been carried out under her supervision and direction.

Formula for the efficacy of the combination of two compounds

The expected efficacy of a given combination of two compounds is calculated as follows (see Colby, S.R., „Calculating Synergistic and antagonistic Responses of Herbicide Combinations", Weeds 15, pp. 20-22, 1967):

If

X   is the efficacy expressed in % mortality of the untreated control for test compound A at a concentration of m ppm or m g/ha,

Y   is the efficacy expressed in % mortality of the untreated control for test compound B at a concentration of n ppm or m g/ha,

E   is the efficacy expressed in % mortality of the untreated control using the mixture of A and B at m and n ppm or m and n g/ha,

then is
$$E = X + Y - \frac{X \times Y}{100}$$

If the observed insecticidal efficacy of the combination is higher than the one calculated as „E", then the combination of the two compounds is more than additive, i.e., there is a synergistic effect.

Example A

Phaedon cochleariae larvae - test

Solvent: 7 parts by weight of dimethylformamide

Emulsifier: 2 parts by weight of alkylaryl polyglycolether

To produce a suitable preparation of active compound, 1 part by weight of active compound is mixed with the stated amount of solvent and emulsifier, and the concentrate is diluted with emulsifier-containing water to the desired concentration.

Cabbage leaves (*Brassica oleracea*) are treated by being sprayed with the preparation of the active compound at the desired concentration and are infested with larvae of the mustard beetle (*Phaedon cochleariae*) as long as the leaves are still moist.

After the specified period of time, the mortality in % is determined. 100 % means that all the beetle larvae have been killed; 0 % means that none of the beetle larvae have been killed.

In this test, for example, the following combination according to the invention shows a synergistic effect:

Table A: Phaedon cochleariae larvae– Test

Active Ingredient	Concentration in ppm	Mortality in % after 3$^{\underline{d}}$
Spirotetramat	100	0
Flubendiamid	4	0
Spirotetramat + Flubendiamid (25 : 1) according to the invention	100 + 4	obs.* cal.** 65 0

* obs. = observed insecticidal efficacy
** cal. = efficacy calculated with Colby-formula

Example B

Spodoptera frugiperda - test

Solvent:	78	Gewichtsteile Aceton
	1,5	Gewichtsteile Dimethylformamid
Emulsifier:	0,5	Gewichtsteile Alkylarylpolyglykolether

To produce a suitable preparation of active compound, 1 part by weight of active compound is mixed with the stated amount of solvent and emulsifier, and the concentrate is diluted with emulsifier-containing water to the desired concentration.

Cabbage leaves (*Brassica oleracea*) are treated by being sprayed with the preparation of the active compound at the desired concentration and are infested with larvae of the fall army worm (*Spodoptera frugiperda*) as long as the leaves are still moist.

After the specified period of time, the mortality in % is determined. 100 % means that all the caterpillars have been killed; 0 % means that none of the caterpillars have been killed.

In this test, for example, the following combination according to the invention shows a synergistic effect:

Table B: Spodoptera frugiperda – Test

Active Ingredient	Concentration in g/ha	Mortality in % after 6^d	
Spirotetramat	0,8	0	
Flubendiamid	0,8	50	
Spirotetramat + Flubendiamid (1 : 1) according to the invention	0,8 + 0,8	obs.* 83	cal.** 50

* obs. = observed insecticidal efficacy
** cal. = efficacy calculated with Colby-formula

Example C

Tetranychus urticae - test

Solvent: 7 parts by weight of dimethylformamide

Emulsifier: 2 parts by weight of alkylaryl polyglycolether

To produce a suitable preparation of active compound, 1 part by weight of active compound is mixed with the stated amount of solvent and emulsifier, and the concentrate is diluted with emulsifier-containing water to the desired concentration.

Bean plants (*Phaseolus vulgaris*) which are heavily infested by the two-spotted spider mite (*Tetranychus urticae*) are treated by being sprayed with the preparation of the active compound at the desired concentration.

After the specified period of time, mortality in % is determined. 100 % means that all spider mites have been killed; 0 % means that none of the spider mites have been killed.

In this test, for example, the following combination shows a synergistic effect compared to the single compounds:

Table C: Tetranychus urticae – Test

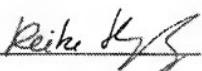| Active Ingredient	Concentration in ppm	Mortality in % after 1^d	
Spirotetramat	100	20	
	20	10	
Flubendiamid	100	0	
Spirotetramat + Flubendiamid		obs.*	cal.**
(1 : 1)	100 + 100	40	20
(1 : 5)	20 + 100	25	10
according to the invention			

* obs. = observed insecticidal efficacy
** cal. = efficacy calculated with Colby-formula

The undersigned declarant hereby declares that all statements made herein of her own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

25.7.2011

Date

Dipl. Biol H. Hungenberg